

## **ARTICLE VIII. HOT WORK OPERATIONS**

### **Section 8.01 — General**

(a) Hot work shall comply with NFPA 51B, *Fire Prevention During Welding, Cutting, And Other Hot Work*, and 527 CMR 1.00 *Massachusetts Comprehensive Fire Safety Code*, Chapter 41. In situations where this article conflicts with the above referenced standards, the more stringent application shall be applied as determined by the Head of the Fire Department.

(b) The definition of Hot Work as listed in 527 CMR 1.00 and NFPA 51B 3.3.2 and 3.3.6 shall include 1) welding and allied processes, 2) heat treating, 3) grinding, 4) thawing pipes, 5) powder-driven fasteners, 6) hot riveting, 7) torch-applied roofing, and 8) similar applications producing or using sparks, flame, or heat.

### **Section 8.02 — Permit for Hot Work Operations**

(a) No person shall install, operate, or maintain any system for welding or cutting, generate acetylene, or store calcium carbide or any of the gasses used in welding, cutting, and heat-treating without a permit for the operations to be performed.

(b) Application shall be made in the name of a person holding a NFPA Hot Work Safety Certification, or an equivalent certification or course completion as determined and approved by the Head of the Fire Department, who will be in charge of the operations covered by the permit. The application shall include the location of the proposed work and the additional information called for by approved reference standards applying to the hot work operations, and to the generation, distribution, or storage of fuel gasses.

(c) Permit holders are responsible for ensuring all persons engaged in hot work operations on the work site hold an NFPA Certification or equivalent certification or course completion as determined and approved by the Head of the Fire Department.

### **Section 8.03 — NFPA Hot Work Safety Certification Required**

(a) No person shall engage in the business of hot work, or perform related operations of gas generation or storage, or assume charge of hot work or related operations, unless he holds a NFPA Hot Work Safety Certification or an equivalent certification as determined by the Head of the Fire Department.

(b) No person shall serve as a fire watch unless he holds an NFPA Hot Work Safety Certification or equivalent certification as determined by the Head of the Fire Department; or is an authorized member of the Boston Fire Department employed as a fire watch.

(c) Any person required to obtain a NFPA Hot Work Safety Certification shall make application to the NFPA and submit to such examination and tests as may be prescribed. The Head of the Fire Department may make such reasonable regulations as he deems suitable for the issuance or renewal of the certificate. Certification shall be for three (3) years, or for a longer period, unless revoked or suspended by the Head of the Fire Department for cause.

(d) The Certification holder shall comply with all NFPA Hot Work Safety Certification requirements and standards.

#### **Section 8.04 - Job Authorization**

(a) No person shall perform hot work operations except under a written authorization by the property owner or agent. Such authorization shall include the address of the property where the work is being performed, and the company authorized to perform that work.

(b) The contractor shall complete a detailed application which shall include the date(s), specific location(s) of the work, description of the work being performed, and any special precautions.

#### **Section 8.05 — Conditions and Requirements for Fire Watch**

A fire watch is required, as a condition of the permit. The fire watch shall be properly equipped and trained in the use of fire extinguishing equipment. A fire watch shall be provided as required, whenever hot work operations are performed, and when any of the following conditions exist:

(a) appreciable combustible material in building construction; or contents is closer than 35 feet to the point of operation;

(b) appreciable combustible material is more than 35 feet away, but exposed to ignition by sparks, falling slag, embers or other sources or heat;

(c) wall or floor openings exist within a 35-foot radius which expose combustible material in adjacent areas, including concealed spaces in walls, floors, and ceilings, to possible ignition; or

(d) combustible materials are present adjacent to the opposite side of metal walls, partitions, ceilings, or roof, which have not been relocated and are likely to be ignited by conduction, convection or radiant heat from hot work operations.

Fire extinguishing equipment shall include fire extinguishers, the number, type, and size, as dictated by the hazard. Conditions may require the use of a connected hose line or other special equipment.

#### **Section 8.06 — Hot Work Operations**

In addition to the requirements of applicable reference standards, the following measures for fire control in connection with hot work shall be observed:

(a) Hot work equipment shall be in satisfactory condition and in good repair. Equipment used in hot work operations shall have components listed and marked by an approved laboratory or testing agency and its application, installation, operation, and maintenance shall be in accordance with applicable approved, reference standards. The Head of the Fire Department shall determine the listings and standards which shall apply to specific systems, applications, or operations.

(b) Loose combustibles shall be swept from floors in a radius of 35 feet from the central point where sparks may land from the operation. Combustible floors shall be kept wet, covered with damp sand, or protected by approved flame-resistant shields. Where floors are wet, personnel operating equipment shall be protected from possible shock

(c) Combustible material within 35 feet of the work site shall be shielded with metal or asbestos guards or curtains or protected by approved flame-resistant coverings so arranged that sparks cannot get under or pass between said covers.

(d) Walls, floor openings, cracks, vertical shafts, ducts, conveyors, ramps, or other means by which sparks could carry to adjacent areas shall be made tight against passage of sparks.

(e) "Hot tapping" or other hot work on flammable gas, liquid transmission, or distribution utility pipelines shall be performed by qualified personnel.

### **Section 8.07 — Hot Work Not Allowed**

- (a) Hot work shall be performed only in areas authorized by the owner.
- (b) Hot work shall not be performed in buildings or spaces protected by a fire suppression system when such system is not fully operative. This condition shall be noted in the application for the permit.
- (c) Hot work shall not be performed in the presence of explosive atmospheres (mixtures of flammable gasses, vapors, liquids, or dusts) or in hollow spaces, cavities, or containers which have not been purged and vented to remove such atmospheres or on used drums, barrels, tanks, or other containers or equipment which is uncleaned, unpurged, or otherwise improperly prepared and in which explosive atmospheres may develop when heated;
- (d) Hot work on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.
- (e) Hot work shall not be attempted on a metal partition, wall, ceiling, or roof having a combustible covering, nor on walls or partitions of combustible, sandwich-type, panel construction.

### **Section 8.08 — Storage of Cylinders and Containers**

- (a) Fuel gas cylinders stored inside of buildings, except those in actual use or attached ready for use, shall be limited to a total gas capacity of 2,000 cubic feet of acetylene or nonliquefied gas or a total water capacity of 735 pounds for methylacetylene propadiene, stabilized. Fuel gas in excess of such amounts shall be stored in a separate location. The ventilation, heating, and control of sources of ignition shall comply with applicable reference standards and electrical work shall comply with the Massachusetts Electrical Code.
- (b) Cylinders of dissolved acetylene shall be stored with the valve up to minimize possibility of solvent being discharged as liquid.
- (c) Oxygen cylinders in storage shall be separated from a fuel gas cylinder or combustible material, including oil or grease, a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high made of a structural assembly having a fire resistance rating of at least one-half hour.
- (d) Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire resistance rating of at least one hour. This partition shall be without openings and shall be gas tight.
- (e) Oxygen cylinders shall not be stored inside of acetylene generator rooms.
- (f) Storage of fuel gas and oxygen cylinders and containers may be prohibited inside buildings when, in the opinion of the Head of the Fire Department, such storage may be hazardous to the occupants of the building.

### **Section 8.09 — Manifolding of Cylinders**

- (a) Fuel gas cylinders connected to one manifold inside a building shall be limited to a total gas capacity of 3,000 cubic feet of acetylene or nonliquefied gas or a total water capacity of 735 pounds for methyl-acetylene-propadiene, stabilized.
- (b). The ventilation, heating, and control of sources of ignition shall comply with applicable reference standards and electrical work shall comply with the Massachusetts Electrical Code.
- (c) High-pressure, fuel gas manifolds shall be provided with approved pressure-regulating devices.
- (d) Low-pressure oxygen manifolds shall be suitable for use with oxygen at gauge pressure of 250 pounds per square inch, shall have a minimum bursting pressure of 1,000 pounds, and shall

be protected by a safety relief device which will relieve at maximum pressure of 500 pounds.

### **Section 8.10 — Service Piping Systems**

- (a) Piping and fittings for service of gas fuel and oxygen in cutting and welding operations shall comply with applicable reference standards. Piping systems shall be tested and proved gas tight at one and one-half times the maximum operating pressure and shall be thoroughly purged of air before being placed in service.
- (b) Protective equipment for piping systems shall be provided by pressure relief devices as required by applicable reference standards.
- (c) Hose connections and hose for oxygen and fuel gas service, including hose used to connect portable outlet headers to service piping, shall comply with the Massachusetts Fuel Gas Code and with applicable reference standards.

### **Section 8.1 1 — Acetylene Generators**

- (a) Operations of acetylene generators shall comply with applicable reference standards.
- (b) Openings from an inside generator room to other parts of the building shall be protected by an approved swinging-type, self-closing fire door. Windows in partitions shall be wired glass in approved metal frames with fixed sash. Fire doors and windows shall comply with applicable reference standards.
- (c) Heating of generator rooms or houses shall be by steam, hot water, or other indirect means. Heating by fire shall be prohibited in all generator houses and generator rooms.
- (d) Calcium carbide shall be handled and stored in accordance with applicable reference standards.

### **Section 8.12 — Electric Arc Welding and Cutting**

- (a) Electric arc welding and cutting equipment shall be of an approved type and its application, installation, and operation shall be in accordance with applicable reference standards.
- (b) The frames or cases of welding machines, except those with internal combustion engines, shall be grounded in an approved manner. Ground connections shall be mechanically strong and electrically adequate for the required current.
- (c) Welding current return circuits from the work to the machine shall have electrical contact at all joints and the operators of equipment shall make inspections at approved intervals to ascertain that electrical contact is maintained.
- (d) When electric arc welding or cutting is to be disconnected for more than one-half hour, the machine shall be disconnected from the power source, the electrodes shall be removed from their holders, and the holders shall be placed so that accidental contact cannot occur.